one-way SBC end office to CLEC end office final or one-way SBC tandem to CLEC end office final. In fact, SBC has agreed with the DOJ to provide the percentage of calls blocked on outgoing traffic from SBC's end offices, access tandems, or local tandems connecting with a LEC's network. SBC's existing measurement is different than that proposed by the Commission. The Commission suggests measuring the percentage of trunk groups blocked, whereas SBC measures the average percentage of trunk blockage. SBC believes it is preferable to measure an average than to measure a percentage. The SBC measurement allows for a comparison of the trunk blockage on the CLEC interconnection final-trunk groups to that of SBC final-trunk groups.

Since CLECs will experience the same level of blockage on the common-trunk groups as SBC, SBC does not support any requirement for ILECs to measure common-trunk-group blockage. Although SBC does not consider this a useful measurement, it has agreed with the DOJ to provide two measurements for common-transport-trunk blockage:

- the percent of local common transport trunk groups exceeding 2% blockage; and,
- the distribution of trunk groups exceeding 2% reflecting the various levels of blocking.

Since this involves common transport, no disaggregation between CLEC and SBC can be made.

SBC would not object to reporting a list of trunk groups that exceeded two percent blocking for three consecutive months. Indeed, this report is currently available for common trunk groups that carry access traffic and a similar report is being developed for common trunk groups that carry local traffic.

The Bell Atlantic/NYNEX Merger Order requires Bell Atlantic to report on blocking that exceeds the design blocking objectives of B.01 for interconnection trunks and B.005 for common trunks. SBC disagrees that it is appropriate to report blockage that exceeds these design-blocking objectives. Tariff F.C.C No. 73 (see attachment 1) states that: "The design blocking objective is assumed to have been met for the capacity ordered if the routine measurements show that the measured blocking does not exceed the thresholds shown in the tables following." The most stringent blocking thresholds for the transmission paths carrying only first-routed traffic between an end office and customer's premises without an alternate route and for paths carrying only overflow traffic is three percent. For transmission paths carrying first-routed traffic and end office and customer's premises by means of an access tandem, the most stringent blocking threshold is two percent. SBC supports using the blocking thresholds in Tariff F.C.C No. 73 as the reporting threshold.

SBC has agreed with the DOJ to provide comparative measurements for its trunk groups carrying retail-customer traffic. SBC will measure the end office to end office final, the end office to tandem, and the tandem to end-office trunk groups.

SBC has agreed with the DOJ that, even though SBC does not believe they are necessary, it will provide common-trunk-group performance measurements. Further, SBC has also agreed to provide an average-trunk-group blockage for the common transport trunk groups; that is, as agreed, SBC will measure SBC end office to SBC tandem and SBC tandem to SBC end office.

The Commission has expressed an interest in requiring ILECs to measure the call completion rates by comparing the percentage of calls completed by SBC customers to SBC customers to the percentage of SBC-customers calls completed to CLEC customers. First, SBC

cannot provide this measurement; that is, it is not feasible. The only comparable, available measurement would be an "incoming matching loss," and that measurement is provided on a switch basis and cannot be split in the manner described. Second, if the interconnection trunk blockage is provided as SBC has described above, this measurement is not necessary.

**b. Collocation.**

The Commission concludes that three measurements are required for collocation:

- average time to respond to a collocation request;
- average time to provide a collocation arrangement; and,
- percentage of due dates missed with respect to the provision of collocation arrangements.

SBC currently tracks this information internally and can provide these three measurements, as described in Attachment A.

## V. REPORTING PROCEDURES

### A. Receipt of Reports.

SBC agrees with the Commission that the appropriate performance measurement reports should be provided to any CLEC that obtains services or facilities through an interconnection agreement or under a statement of generally available terms. SBC has agreed with the DOJ to provide these reports to CLECs upon request. In addition, SBC would provide any of these reports upon request to the Commission or to appropriate state officials.

As long as the data for CLECs was in the aggregate and the SBC data was only expressed in the average or in a percentage, SBC would not be opposed to providing appropriate performance measurement reports to a central clearinghouse. SBC suspects that the CLECs

consider their individual results competitively sensitive. This is an issue best left to the CLECs to address, however. Where there are analogous services, SBC has agreed in interconnection agreements to provide reports to CLECs that contain data for the individual CLEC, for the aggregate of all CLECs, and for SBC. SBC believes that it would be appropriate to report, without any underlying data, the aggregate of all CLEC data, as well as that of any ILEC, to the general public.

**B. Frequency of Reports.**

SBC is currently providing monthly performance reports to CLECs. Monthly should be the minimum required reporting time frame. For the previous month's results, SBC provides the performance measurement report to the CLECs on or near the fifteenth of the month. A portion of the data is not available until the fourth workday — or later in the case of the billing measurements. Therefore, unless some of the measurements are reported in arrears, it is impossible to provide the data earlier than the fifteenth of any given month.

**C. Auditing Requirements.**

For several CLECs, SBC has the following negotiated provision in its negotiated interconnection agreements in Texas:

> "CLEC" and SWBT will consult with one another and attempt in good faith to resolve any issues regarding the accuracy or integrity of data reported. In the event that "CLEC" requests such consultation and the issues raised by "CLEC" have not been resolved within 45 days after "the request for consultation, then SWBT will allow "CLEC" to have an independent audit conducted, at "CLEC's" expense, of SWBT's performance measurement data collection, computing, and reporting processes. "CLEC" may not request more than one audit per twelve calendar months under this section.

This provision allows CLECs to obtain an independent audit if their issues cannot be resolved. By allowing only one audit in a twelve-calendar-month period, it also protects SBC from frivolous audits.

The model reporting procedures should not include providing access to the underlying raw data on a regular basis. This is proprietary and competitively sensitive information and, therefore, its disclosure to CLECs should not be required. If a CLEC questions the accuracy of SBC's reports, it should have the ability to request an independent audit to validate SBC's data and procedures.

The summary-level data that is reported to the CLECs will be kept indefinitely. Currently, SWBT keeps detail-level data for thirteen months. However, SWBT is investigating the feasibility of retaining this information for a longer period of time.

## VI. EVALUATION OF PERFORMANCE MEASUREMENTS

Because it would be beneficial to all parties, SBC supports the need for a uniform evaluation process that relies on objective criteria. SBC would only have to program one set of formulas for the performance measurements, allowing CLECs and state and federal regulatory bodies to make comparisons across regions. This would provide consistency of treatment among CLECs. SBC has adopted this approach in the interconnection agreements in Texas and Missouri. Both states contain the same methodology for determining compliance.

The most appropriate statistical test would be one that is simple and found in almost any

statistical text. Simple statistical tests such as the Z-test[4] and the T-test[5] will detect differences in performance. Use of simple statistical tests will not require CLECs to retain statistical specialists to read and interpret the results.

Either the z-test or the t-test that accounts for the variation in both the CLEC data and the SBC data (pooled variation) should be used. Both the SBC and the CLEC data will have random

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[4] As used in performance measurements, the Z-Test is a statistical test designed to determine if the difference between the mean, or average, of two distinct samples is great enough to conclude that the samples are probably different and, therefore, that the population they were drawn from are different. The testing procedure is based on sample evidence and probability theory used to determine whether the hypothesis is a reasonable statement and should not be rejected or is unreasonable and should be rejected. In order to conduct the test, the tester needs to know the mean of each sample, the sample size, and the amount of variation in the population the samples were drawn from. The tester usually does not know this last value so he substitutes the measure of variation calculated from the sample itself. As long as the sample size is greater than 30 this estimated measure of the variation is deemed close enough. The value of 30 is a "rule of thumb," but it is cited in most textbooks on the subject. The term Z-Test comes from the historical practice of statisticians referring to a standard normal distribution — this is a specific probability distribution function — as the z-distribution. The term is used in most books dealing with statistical hypothesis testing.

[5] The T-Test is done in almost the same way as the z-test. The difference in the two tests is based on the sample size. For the z-test, the tester has at least 30 observation for each sample. With this sample size, the tester is reasonably sure that the variance estimate is reliable and the underlying mathematical assumptions are valid. If the sample size is less than 30, then the variance estimator derived from the sample becomes less and less reliable. When this happens, the z-distribution is no longer valid. A different mathematical distribution is used. The student t or t-distribution is used as the test statistic. When the t-test is used, the tester also makes a different estimate of the population variation. Instead of calculating the variation in each sample separately, the tester pools the data and makes one variance estimate. For the t-test, this is common and well documented. The draw back to using the t-test is that there exists a family of t-distributions, one for each sample size. With the z-test, there is only one z-distribution — regardless of sample size. As the sample size gets smaller, the t-distribution gets flatter and more spread out. In layman terms, this means that the tester will need stronger evidence before the tester rejects the hypothesis of no difference. Since the test is based on fewer observations, this requirement of stronger evidence is reasonable.

variation. Using a test based on only the variation in the SBC data would not be statistically valid. Such a method would be equivalent to using the incumbent's data to establish a monthly benchmark and then comparing the CLEC's results to that benchmark. If the underlying presumption is that both sets of data represent random samples from the same population, then using pooled variation is the proper method. Since the CLEC will have some influence over its own results, ignoring its variation could easily lead to situations where the ILEC is held responsible for CLEC-caused differences in performance.

A statistical difference does not necessarily indicate an actual difference in performance and cannot be used by itself to determine if an ILEC is discriminating against a CLEC. Statistical differences identify those areas of performance that need further study. For example, the ILEC and the CLEC processes being measured may be different and, therefore, should not be expected to produce the same result. Also, differences may arise if one or more of the underlying presumptions necessary for the statistical test to be valid are not being met. These statistical tests cannot tell us why a difference exists, they only state that one does exist and that further study to determine the cause is necessary.

A one-tailed t-test is not appropriate. Statistically significant differences in either direction need to be identified. Although the CLEC's primary concern is to identify areas where the data indicates inferior performance, it is just as important to identify those areas where SBC provides superior service in order to evaluate whether SBC is meeting its statutory obligations. When making any evaluation, it is important to look at the entire set of measurements and the degree to which they are met or exceeded.

SBC does not believe that a test for differences in variances is necessary. In theory, it is possible to have two means that are shown to be equivalent using a z-test or t-test and yet fail a test of equality of variance. In practice, it would be unlikely that SBC could intentionally manipulate the variances while maintaining an equivalence of means. Therefore, a test for equality of means is sufficient to identify areas of potential differences that require further investigation.

If, however, SBC were required to do a test for equality of variance and a significant difference were found, then the t-test would be invalid. Consequently, using the variance test establishes a two-step approach:

- test for equality of variance and
- if the data passes the test for equality of variance, then do the analysis of means test.

If the data fails the analysis of variance test, root-cause analysis must be performed to determine the cause of the difference in variances. This would require an additional test on each measurement without adding significant value.

When initially reporting performance measurements, it is likely that there will be an insufficient number of data points to provide statistically valid results. The t-test can be adjusted for smaller samples by changing the degrees of freedom for the test. For very small samples — less than 30 — the use of any statistical test to try to identify discriminatory practices is questionable. While the results may be worth identifying and investigating, they should not be used for punitive actions.

The Commission has pointed out that the t-test and the z-test require a minimum number of observations — approximately thirty — to be valid. When the test is used to detect a

difference between two proportions, the determination of the minimum requirement is different. Many of the measurements will deal with "error" rates or "success" rates. These values are expected to be very close to 0 or 1 respectively. When this is the case, the required minimum is determined by finding the smallest value of n that makes both n*p and n*(1-p) greater than 5. As the error or success rate — in this case, "p" — gets closer to 0 or 1, the required sample size gets very large.

Although small samples will generally be a concern, at least initially, there will be certain measurements, such as report rate, where very small differences are determined to be statistically significant due to large samples. In these cases, other methods should be employed to determine if the difference is meaningful. One approach would be to use a "Runs Test."[6] This would require eight months of data to determine if a statistically significant difference exists. This test would indicate whether there are consistent long-term differences in performance. Under the rule of "no harm, no foul," it may be prudent to set some minimal difference in performance that must exist before any statistical tests are performed. If the difference is within the threshold, parity should be implied.

SBC disagrees with AT&T's proposals. The proposed AT&T system is unfair and will result in the unjustified transfer of millions of dollars from SBC to the CLECs. AT&T proposes three criteria that can each be shown to lead to the unwarranted payment of penalties to the individual CLECs each month. The first criterion is the maximum number of comparisons failing the test of nondiscrimination at the generally accepted 95% confidence limit. Presumably

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[6] **Runs Test** is a method of tracking a process over time and determining if there is a lack of randomness. Runs analysis is particularly useful in quality control and time series analysis.

SBC would be financially penalized for each measurement over the limit. The following example shows how costly this proposal could be:

> Presuming that there is no discrimination and the results of the statistical test are based on nothing more than random variation, then let
>
> N = number of measurements made each month,
> n = number of permitted failures = 0.05*N (under AT&T's proposal),
> D = penalty, in dollars, for each failure in excess of n,
> [x] = smallest integer > x function,
> C = expected monthly cost to the SBC.
> Then,
>
> $$C = D^* \sum_{[0.05N]}^{N} \binom{N}{i} (0.05)^i (1-0.05)^{N-i} (i - 0.05N)$$

This may look daunting but it is quite easy to evaluate when N and D or known.

> For example, if N = 100 (100 measurements) and D = $50,000 (penalty for each failure in excess of 5), then the expected cost is:
>
> $$C = \$50{,}000^* \sum_{i=5}^{100} \binom{100}{i} (0.05)^i (1-0.05)^{N-i} (i - 5)$$
>
> = $42,754.25 (Note: This represents payment on less than one measurement a month on average.)

On an annual basis this would be $513,051 per CLEC.

Since each CLEC would be accorded the same treatment, the above amount would be payable to each one on an annual basis. If the measurement system is applied on a state or market-area level, then the expected cost grows even higher. With seven states and 179 CLECs, this figure could easily grow to half a *billion* dollars annually. Since there is no real limit on the

number of CLECs that could apply for a license to do business, this method of determining penalties and damages represents a huge, totally unwarranted open-ended liability for ILECs.

The expected cost to SBC under each of the other two components in AT&T's proposal can be calculated in a similar manner. The second criterion of AT&T's proposal would specify damages if any measurement failed the test for two consecutive months. This would happen due to random variation with a probability of 0.0025. Presuming a $50,000 fine and the same 100 measurements, the associated annual cost to SBC, payable to each CLEC, would be $137,500 annually. The third criterion of AT&T's proposal would have an expected annual cost of $156,000 payable to each CLEC.

For the measurement system to be fair to all parties, it should start from the premise that, if no discrimination is present, then no penalties should be payable. The performance measurement system should be based on the concept of a fair game as defined by probability theory. It is the lack of fairness that makes AT&T's proposals untenable.

SBC proposes a system that allows it to accumulate credits for performance that is statistically superior. This allows the random variation in the measurement system to balance out over time. The result is a system with an expected pay out of zero if there is no discrimination. This system requires a two-tail test.

It is also worth considering the use of other techniques — such as a Runs Test — to minimize the possibility of gaming the results. This cannot be done initially since historical data would be required; however, once sufficient data is available, a system that requires their use could be implemented in conjunction with standard t-test and z-test. In addition, the measurement system needs to have specific rules on what should be done when a specific

measurement has been repeatedly identified as statistically different in either direction due to identifiable non-discriminatory reasons.

Other statistical analyses are also available, such as discriminate analysis, cluster analysis, and multivariate analysis. These procedures are complex, hard to interpret and even harder to audit; however, these methods may be worth consideration in the future.

The data provided to the CLECs or regulatory bodies could be made available electronically. SBC would make available data for the individual CLEC performance and SBC's own summary performance data.

Since SBC will be the only party with access to all the data necessary to do the analysis, SBC should perform the statistical analysis. If the question of accuracy or procedure becomes an issue and if the two parties cannot resolve the dispute, the CLEC can request an independent audit. The audit process will provide adequate safeguards to ensure that results are accurate.

There may be services that a CLEC provides for which the ILEC does not have any analog. When there is no analogous service or function in the retail environment, SBC is obligated to provide the CLEC with a meaningful opportunity to compete. The evaluation must compare SBC's performance to some agreed-upon performance standard. In its interconnection agreements in Texas and Missouri, SBC has agreed to performance standards on those types of services and functions.

## VII. OTHER ISSUES RAISED BY PETITIONERS

### A. Performance.

When there is an analogous service or function in the ILEC's retail environment, performance standards are not appropriate. The only time performance standards are appropriate

is when there is no analogous service or function in retail to compare to the CLEC's performance. Until there is some historical-performance data available to establish reasonable standards, it is premature to set performance standards for non-analogous services or functions.

**B. Technical Standards.**

When developing OSS interfaces, the ILECs must rely on standards established by industry bodies. There are too many CLECs to be able to customize an interface for each one. The only practical approach is for the CLECs to participate in the industry-standards bodies and for the ILECs to develop interfaces that meet industry standards or guidelines.

The six-month time frame for implementation of industry standards suggested by the Commission seems reasonable. Nevertheless, OBF could establish a different "agreed-upon" conversion date, requiring some flexibility if that date establishes a time frame greater than six months.

## VIII. CONCLUSION

In conclusion, SBC recommends that the Commission avoid the trap of trying to make "one-size-fits-all" rules for performance measurements. The prior agreements and the existing processes of the individual ILECs must be respected. Competition is not furthered by unnecessarily burdening ILECs with measurements and reports that do not provide meaningful information or that provide meaningful information that could be obtained through alternative and more cost-effective means.

Respectfully submitted,

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June 1, 1998

By: 

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| ACRONYM | EXPLANATION |
|---|---|
| CESAR | ***Carrier Enhanced System for Access Request*** -- a system that allows carriers to input their own service orders via a standard data dictionary. Provides editing, error reporting and SORD translation routines, and submits orders to SORD and provides the user a status of the order. *CESAR* also provides a reverse feed of SORD completions. |
| PBSM | ***Pacific Bell Service Manager (PBSM)*** is an ordering interface that provides CLECs with the capability to submit Resale Centrex and ISDN service requests. |
| STARWRITER | Order entry system that allows service representatives to order residential service. Menu-driven system. Does not support retrieval or correction of order. |
| SORD | ***Service Order Retrieval and Distribution*** -- a mechanized on-line application which accepts, edits, stores and distributes service orders for installation, modification, disconnection of telephone and related services. The system has the capability to retrieve service, equipment, and other customer information. |
| DATAGATE | Pre-Ordering interface -- ***DataGate*** is a gateway capability that allows CLECs to use their own user interface to access ILEC systems in real time. |

| ACRONYM | EXPLANATION |
|---|---|
| VERIGATE | Pre-Ordering interface -- ***Verigate*** is used to confirm CLEC service order information, thus reducing the number of service order supplements and shortening the time it takes to process an order. |
| Toolbar | A "Windows" - like communications platform from which to launch several different applications. |
| LEX | Pacific Bell graphical user interface (GUI) that allows CLECs to create and submit national standard format (LSR) for ordering Resale services and UNEs. Like Verigate, LEX is part of the Toolbar. |
| RMI | ***Resale Mechanized Interface (RMI)*** is a Resale ordering gateway utilizing Pacific Bell proprietary formats via NDM data exchange. Functionality includes Residential and Business Basic Exchange Services as well as PBX trunks and DID. This interface will be phased out and replaced with functionality via the EDI ordering interface. |
| EDI | ***Electronic Data Interchange*** |
| PRAF | ***Pacific Remote Access Facility (PRAF)*** is the secured entry point for CLECs to gain real-time access to Pacific's internal Operational Support Systems. Access Control lists in the firewall servers provide security. Access to the PRAF is available through Private Line, Dial and ISDN connections. |

## CERTIFICATE OF SERVICE

I, Kathy A. Moody, hereby certify that "Comments of SBC Communications, Inc." in CC Docket No.98-56/RM-9101 have been served on June 1, 1998, to the Parties of Record.

Kathy A. Moody

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June 1, 1998

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